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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/563,878

01/09/2006

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L9289.05202

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06/23/2010

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EXAMINER

SAMS, MATTHEW C

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

06/23/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/563,878 | Applicant(s) MALIK ET AL. | |
| | Examiner MATTHEW SAMS | Art Unit 2617 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33,35-38,40-47 and 49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33,35-38,40-47 and 49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action has been changed in response to the amendment filed on 3/29/2010.
2. Claims 33, 35-38, 40-47 and 49 have been amended. Claim 39 has been canceled.
3. The Examiner contacted the Applicant in hopes of amending the claims to be allowable, however time constraints did not allow the Applicant and the Examiner to come to an agreement.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 33, 35-37 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi et al. (US-6,983,167 hereinafter, Adachi) in view of Gurbuz et al. (US-7,301,924 hereinafter, Gurbuz).

Regarding claim 33, Adachi teaches an access point (Fig. 1 [1]) that communicates with one or more stations spaced apart in a reception space in a medium access control system in a wireless network (Fig. 1 [4-1 through 4-3]), and that is equipped with an SMDA compatible multi-beam antenna (Fig. 1 [2]) and a plurality of

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transceivers (Fig. 2 [12-1 through 12-3]) that can respectively be simultaneously connected to different antenna beams (Col. 4 lines 51-60 and Fig. 1 [3-1 through 3-3]) and transmit data using a superframe, (Col. 6 lines 53-59 *i.e.* a superframe is the time between beacon transmission intervals) wherein

the superframe has a timing structure comprising:

(i) a periodically transmitted beacon frame (Col. 6 lines 53-54) that reports existence of a wireless network and provides a timing reference to each station on the network; (Col. 6 line 53 through Col. 7 line 7 *Examiner's Note*: the point of a beacon frame in IEEE802.11 is to be able to find and attach/associate with an access point)

(ii) a supervised access mode that is a period in which an antenna is configured in a directional pattern (Col. 4 lines 51-56), access to a wireless channel is controlled and transmission with a plurality of stations is adjusted such that simultaneous transmissions with the plurality of stations can be implemented on a same channel (Col. 4 lines 42-65 communicate simultaneously with a plurality of stations on the same channel), and each station follows predetermined rules defined by the access point or by a network coordinator; (Col. 7 line 52 through Col. 8 line 25 and Col. 12 lines 15-28)

Adachi differs from the claimed invention by not explicitly reciting an unsupervised access mode that is a period in which an access point antenna is configured in an omni-directional pattern, and each station accesses a channel freely so as to be able to perform transmission using conventional carrier sensing technology; and signaling whereby an access point starts or terminates a supervised or unsupervised access period.

In an analogous art, Gurbuz teaches a wireless network (Fig. 1 [100]) comprising an access point (Fig. 1 [102]) equipped with a plurality of multi-beam antennas (Fig. 1 [106]) serving a plurality of stations (Fig. 1 [104]) comprising:

(i) a periodically transmitted beacon frame (Fig. 4 [Beacon]) that reports existence of a wireless network and provides a timing reference to each station on said network; (Col. 5 lines 48-53)

(ii) a supervised access mode that is a period in which an access point effectively improves network throughput by controlling access to a wireless channel and adjusting transmission with users so that antenna characteristics are utilized and a plurality of simultaneous transmissions can be implemented on a same channel; (Fig. 4 [Serving MIMO] and Col. 4 lines 20-29)

(iii) an unsupervised access mode that is a period in which the antenna is configured in an omni-directional pattern, and each station accesses a channel freely so as to be able to perform transmission using conventional carrier sensing technology; (Fig. 4 [Serving SISO] and Col. 4 lines 64-67) and

(iv) signaling whereby the supervised or unsupervised access period is started or terminated, (Fig. 4 [Beacon and MIMO Beacon] and Col. 5 lines 48-53) wherein:

the beacon frame provides each station with an antenna type of a dynamic beam or fixed beam; (Fig. 4 [Beacon and MIMO Beacon])

when the antenna type is the dynamic beam, the unsupervised access mode is executed in order to detect a new station in the reception space and when the antenna type is the fixed beam, the unsupervised access mode is executed in a case where a

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rogue station is detected in the reception space. (*note: these limitations are recitations of intended use, but do not provide any changes in the structure/components of the access point, therefore it is obvious to one of ordinary skill in the art to be able to function in either of these modes, with an antenna that can be fixed and dynamic*)

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement wireless communication system of Adachi after modifying it to incorporate the unsupervised access mode and signaling to start/terminate the access periods of Gurbuz since it is advantageous to be able to maximize the spectrum by utilizing MIMO while still supporting legacy devices that operate using SISO, thereby making the network more user friendly by supporting a wider range of devices.

Regarding claim 35, Adachi in view of Gurbuz teaches a protocol stack comprising:

(i) a medium access control layer that defines an access rule whereby a plurality of wireless stations access a common medium; (Adachi Col. 7 line 52 through Col. 8 line 8)

(ii) a physical layer that performs actual data transmission and reception on a wireless channel; (Gurbuz Col. 4 lines 1-9)

(iii) a management entity that manages and adjusts operation of said medium access control layer and said physical layer in order to improve overall wireless network throughput. (Gurbuz Col. 4 lines 20-67 “transmitter 202 transmits at twice the data rate

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of conventional 802.11a units", "the MAC layer packet is twice as large but divided into 2 for transmission via 2 spatial subchannels" and "single IF/RF chain")

Regarding claim 36, Adachi in view of Gurbuz teaches said medium access control layer comprises:

(i) a contention based access mechanism whereby a carrier sensing mechanism is used and stations compete for a transmission medium based on one set of rules; (Adachi Col. 15 lines 11-17 and Col. 18 lines 29-35)

(ii) a polling based channel access mechanism whereby an access point can satisfy a band request of a specific station while maintaining a service quality level specified beforehand by that station; (Gurbuz Col. 5 lines 36-47 and Col. 6 lines 11-30) and

(iii) a beam access coordinator that implements high-throughput by adjusting data transfer between antennas and an access point and utilizing a function of a multi-beam antenna using said contention based and said polling based access mechanisms. (Gurbuz Col. 4 lines 20-22, lines 55-63 and Col. 5 lines 36 through Col. 6 line 67)

Regarding claim 37, Adachi in view of Gurbuz teaches wherein said beacon frame described is broadcast by an access point, and has a function that reports existence of a WLAN and provides a timing reference to stations scattered on a network (Adachi Col. 6 lines 53-59, Gurbuz Fig. 4 [Beacon] and Col. 5 lines 48-53), and comprises:

(i) an identifier unique to said wireless network whereby each station can uniquely and explicitly identify an access point and therefore a specific network; (Adachi Fig. 5A [6] and Col. 7 line 61 through Col. 8 line 16)

(ii) a wireless network function and protocol related information specially defined by implementation of an access point; (Adachi Col. 8 lines 1-8 and Gurbuz Col. 5 line 48 through Col. 6 line 10)

(iii) information describing a used frequency of a beacon broadcast by an access point on a wireless network; (Adachi Col. 7 lines 37-42 *i.e.* inherent to IEEE802.11b while 5 GHz. is inherent to IEEE802.11a and Col. 7 line 5) and

(iv) a period in which a wireless network operates in the supervised access mode, and whereby a conventional station does not execute association or transmission in the superframe period, as a result of which effects on wireless network due to such transmissions/collisions are minimized. (Gurbuz Fig. 4 [Serving MIMO] and Col. 4 lines 20-29)

Regarding claim 45, Adachi in view of Gurbuz teaches said access point transmits to each station of specific beam a Poll+Supervised Contention Announcement frame (Gurbuz Col. 6 lines 26-30 "CF-End") that defines a wireless medium polling based medium access and contention based access schedule (Gurbuz Fig. 4 [CP]), said Poll+Supervised Contention Announcement frame comprising:

(i) a polling list assigned to respective stations; (Gurbuz Col. 6 lines 11-30) and

(ii) an information element that declares a medium for uplink contention based access use of a specified period known as a supervised contention access period. (Gurbuz Fig. 1 [102] and Col. 6 lines 11-43)

Regarding claim 46, Adachi in view of Gurbuz teaches said polling list comprises:

(i) an address of a station for which polling based access is permitted; (Gurbuz Col. 6 lines 11-18)

(ii) a polling time –that is, a time when a station can start transmission; (Gurbuz Col. 6 lines 11-26 *i.e.* the times are defined because they can be repeated and the subscriber units can communicate data in response to being polled or they receive downstream data from the access point)

(iii) a polling period –that is, a period for which a station can execute transmission; (Gurbuz Col. 6 lines 11-26 *i.e.* the times are defined because they can be repeated and the subscriber units can communicate data in response to being polled or they receive downstream data from the access point) and

(iv) a purpose of polling or permission for indicating to a station that polling is for a stream that requested a band beforehand, or to request reception confirmation for a downlink frame or the like transmitted in the past. (Gurbuz Col. 6 lines 19-22)

Regarding claim 47, Adachi in view of Gurbuz teaches wherein said access point uses an SDMA compatible antenna capable of forming a sector-shaped beam (Adachi Col. 1 lines 47-54), characterized by:

(i) comparatively stable gain in a passband that minimizes fluctuation of a reception power level for a user belonging to that beam; (which is achieved by weighting signals Adachi Col. 6 lines 33-52 and Col. 7 lines 8-24) and

(ii) sharp roll-off-that is, a narrow transition width – such that a beam is generated at short intervals by an access point by suppressing occurrence of interference due to transmission from a particular beam to a user of a different beam, spectral efficiency is increased, and consequently high-throughput is obtained. (Adachi Col. 1 lines 47-54 and Gurbuz Col. 1 lines 37-49)

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi in view of Gurbuz as applied to claim 37 above, and further in view of LeBlanc et al. (US-5,508,707 hereinafter, LeBlanc).

Regarding claim 38, Adachi in view of Gurbuz teaches said wireless network function and protocol related information comprises:

(i) a protocol reference number that enables a station's medium access control protocol type to be confirmed; (Adachi Col. 8 lines 1-25, Fig. 5A [F1a & F1b], Gurbuz Fig. 4 [Beacon & MIMO beacon])

(ii) antenna type and pattern; (Gurbuz Fig. 4 [Beacon & MIMO beacon] and Col. 5 lines 48-53) and

(iii) antenna switching/operating functions. (Gurbuz Col. 5 line 48 through Col. 6 line 10)

Adachi in view of Gurbuz differs from the claimed invention by not explicitly reciting the information comprises station direction finding/positioning functions.

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In an analogous art, LeBlanc teaches an SDMA equipped base station (Abstract) that transmits beacons containing information related to station direction finding/positioning functions. (Col. 6 lines 20-34) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the communication system of Adachi in view of Gurbuz after modifying it to incorporate the ability to transmit location determining information in a beacon transmission of LeBlanc since it enables the location of the mobile device to be determined while quickly orientating smart antenna arrays to serve a mobile terminal. (LeBlanc Col. 12 lines 9-40)

7. Claims 40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi in view of Gurbuz and Patel et al. (US-6,865,185 hereinafter, Patel).

Regarding claim 40, Adachi teaches wherein said access point, in response to said Association Request frame (Adachi Fig. 7 [S108]), transmits an Association Response frame (Adach Fig. 7 [S109]) request that accepts or denies a request of each station (Adachi Col. 12 lines 15-28), and comprises information elements described in following (i), (iv), and (v) and further comprises information elements described in (ii) and (iii) according to a network configuration, said access point and station functions, and a structure of a transmitted Association Request:

(i) a wireless network identifier for acknowledging and responding to an Association Request created by a station; (Adachi Fig. 5A [BSSID], Col. 8 lines 1-3 and 14-16 and Fig. 7 [S108])

(iv) an address of a station itself that is an Association Response transmission destination; (Adachi Fig. 5A and Col. 8 lines 9-25) and

(v) information relating to request station (that is, success or failure) and characteristics and functions supported by an access point. (Adachi Fig. 7 and Col. 12 lines 15-28)

Adachi differs from the claimed invention by not explicitly reciting step v.

In an analogous art, Gurbuz teaches a wireless network (Fig. 1 [100]) comprising an access point (Fig. 1 [102]) equipped with a plurality of multi-beam antennas (Fig. 1 [106]) serving a plurality of stations (Fig. 1 [104]), further including:

(v) information relating to characteristics and functions of a protocol implemented by a station, that determines a possibility or otherwise of association with an access point, and determines a method of providing the best service to that station when association is accepted. (Gurbuz Col. 6 lines 31-53)

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement wireless communication system of Adachi after modifying it to incorporate the ability to inform an access point of the type of protocol to use for communication of Gurbuz since it enables the ability to communicate with MIMO-capable devices and still have the backwards capability to communication with non-MIMO-capable devices. (Gurbuz Col. 6 lines 44-60)

Adachi in view of Gurbuz differs from the claimed invention by not explicitly reciting steps ii and iii.

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In an analogous art, Patel teaches a wireless network that includes the ability to uniquely identify each packet with a sector of the wireless network and the specific beam within a sector of a wireless network (Col. 24 lines 20-33) and (ii) a group identifier of a beam group used by an access point for communication with that station; (Patel Col. 24 lines 26-27 "sector in the wireless network")

(iii) a beam identifier of a beam used by an access point for communication with that station; (Patel Col. 24 lines 28-29 "a specific beam within a sector")

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication network of Adachi in view of Gurbuz after modifying it to incorporate the ability to distinctly identify the location of the mobile device within a cellular network for each packet transmitted of Patel. One of ordinary skill in the art would have been motivated to do this since it enables the ability to read the header information of a packet and know exactly how the base station is going to communicate the packet to the mobile device.

Regarding claim 42, Adachi in view of Gurbuz teaches the limitations of claim 33 above including the ability to transmit management frames that include the access point/WLAN ID (Adachi Fig. 5A [BSSID]) and the address of a station that is a transmission destination of the management frame (Adachi Fig. 5A [Destination Address]), but differs from the claimed invention by not explicitly reciting a group ID determined by an access point and assigned to a station whose address was specified

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and a beam identifier of a beam used by an access point in a next communication with a station whose address was specified.

In an analogous art, Patel teaches a wireless network that includes the ability to uniquely identify each packet with a sector of the wireless network (analogous to the group ID) and the specific beam within a sector of a wireless network. (Col. 24 lines 20-33) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication network of Adachi in view of Gurbuz after modifying it to incorporate the ability to distinctly identify the location of the mobile device within a cellular network for each packet transmitted of Patel. One of ordinary skill in the art would have been motivated to do this since it enables the ability to read the header information of a packet and know exactly how the base station is going to communicate the packet to the mobile device.

Regarding claim 43, Adachi in view of Gurbuz and Patel teaches wherein said access point broadcasts to each station of a specific beam group a Beam Start Beacon frame that indicates a start of operation to users of that beam group (Gurbuz Fig. 4 and Col. 5 lines 48-53), said Beam Start Beacon frame comprising:

- (i) an access point address/WLAN ID enabling identification of a transmission source for each station; (Adachi Col. 8 lines 1-13)

- (ii) information relating to wireless network functions and protocol; (Adachi Col. 8 lines 1-8 and Gurbuz Col. 5 lines 48-58)

- (iii) a group ID of said beam; (Patel Col. 24 lines 26-27 “sector in the wireless network”)

(iv) a beam ID of said beam; (Patel Col. 24 lines 28-29 "a specific beam within a sector")

(v) a period in which said group is active –that is, a period in which an access point performs transmission/reception with users of said group before switching to a different pattern in order to handle users of another group; (Gurbuz Col. 5 lines 48-60 and Fig. 4)

(vi) a frequency for transmitting a Beam Start Beacon that makes it possible for stations of said group and beam to achieve mutual synchronization; (Gurbuz Col. 5 lines 48-50) and

(vii) a schedule of outbound transmissions created by an access point in a current group period. (Gurbuz Col. 6 lines 11-30 and Fig. 4)

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi in view of Gurbuz as applied to claim 33 above, and further in view of Karimi et al. (US-2001/0046882 hereinafter, Karimi).

Regarding claim 41, Adachi in view of Gurbuz teaches the limitations of claim 33 above, but differs from the claimed invention by not explicitly reciting the limitations of claim 41.

In an analogous art, Karimi teaches in cellular radio telecommunications networks (Abstract) that utilize SDMA (Page 1 [0006]), it is common practice to assign training sequences to SDMA users (Page 1 [0003] "assign different signatures") which have a defined length (Fig. 1 i-th Train Sequence) which are used in the uplink (a transmission from user terminal to base station) in order to estimate the location of the

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user terminal (*i.e.* direction of arrival DOA). (Page 1 [0003]) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication system and method of Adachi in view of Gurbuz after modifying it to incorporate the use of training sequences for location determining of Karimi since utilizing training sequences to have SDMA user share the same physical channel is a conventional technique in the art. (Karimi Page 1 [0003]) Further, it is well within the scope of one of ordinary skill in the art to recognize that the assigning of training sequences to users in a SDMA network is analogous to the management frame of Adachi, which is described as frames for managing a wireless system and includes the address of the destination and the source of the transmission. (Adachi Col. 8 lines 1-16)

9. Claims 44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi in view of Gurbuz, Patel and Karaoguz (US-2004/0029620).

Regarding claim 44, Adachi in view of Gurbuz teaches the limitations of claim 33 above including the ability to transmit in beacon frames an access point address/WLAN ID enabling identification of a transmission source for each station (Adachi Col. 8 lines 1-16) and information relating to wireless network functions and protocol (Adachi Col. 8 lines 1-8), an access point (Gurbuz Fig. 1 [102]) equipped with a plurality of multi-beam antennas (Gurbuz Fig. 1 [106]) serving a plurality of stations (Gurbuz Fig. 1 [104]) that broadcasts to each station of a specific beam group a Beam End Beacon that indicates termination of operation to users of that beam group. (Gurbuz Fig. 4 and Col. 5 lines

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48-53) Adachi in view of Gurbuz differs from the claimed invention by not explicitly reciting a group ID of the beam and a beam ID of the beam.

In an analogous art, Patel teaches a wireless network that includes the ability to uniquely identify each packet with a sector of the wireless network and the specific beam within a sector of a wireless network. (Col. 24 lines 20-33) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication network of Adachi in view of Gurbuz after modifying it to incorporate the ability to distinctly identify the location of the mobile device within a cellular network for each packet transmitted of Patel. One of ordinary skill in the art would have been motivated to do this since it enables the ability to read the header information of a packet and know exactly how the base station is going to communicate the packet to the mobile device.

Adachi in view of Gurbuz and Patel differs from the claimed invention by not explicitly reciting a period in which said group is inactive, and said users can adopt an operating mode that facilitates a reduction in power consumption.

In an analogous art, Karaoguz teaches a power management system in a wireless network (Abstract) that includes the ability to determine an activity time based on a number of communication beacons. (Page 4 [0038], Fig. 3, Pages 6-7 [0055-0056] and Fig. 8) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication system of Adachi in view of Gurbuz and Patel after modifying it to incorporate the ability to enter a power saving mode of Karaoguz since a mobile device becomes more user friendly

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the longer the device can operate between battery charges. (Karaoguz Page 1 [0009-0011])

Regarding claim 49, Adachi in view of Gurbuz and Patel teaches the limitations of claim 43 above and that the downlink schedule element of said Beam Start Beacon shows an outbound transmission schedule composed of a transmission destination address (Gurbuz Col. 6 lines 19-22), transmission length (Gurbuz Fig. 4 and Col. 6 lines 19-26), and time at which said transmission is performed (Gurbuz Col. 6 lines 19-26) and shows an end of an outbound transmission schedule-that is, a transmission time corresponding to a Poll+Supervised Contention Announcement frame. (Gurbuz Col. 6 lines 19-30) Adachi in view of Gurbuz and Patel differs from the claimed invention by not explicitly reciting that a station that is not scheduled to receive an outbound transmission in a given group period to execute power-saving in a downlink period of that group period.

In an analogous art, Karaoguz teaches a power management system in a wireless network (Abstract) that includes the ability to determine an activity time based on a number of communication beacons. (Page 4 [0038], Fig. 3, Pages 6-7 [0055-0056] and Fig. 8) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the wireless communication system of Adachi in view of Gurbuz and Patel after modifying it to incorporate the ability to enter a power saving mode of Karaoguz since a mobile device becomes more user friendly the longer the device can operate between battery charges. (Karaoguz Page 1 [0009-0011])

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW SAMS whose telephone number is (571)272-8099. The examiner can normally be reached on M-F 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW SAMS/
Examiner, Art Unit 2617

/LESTER KINCAID/
Supervisory Patent Examiner, Art Unit 2617